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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/652,493	09/02/2003	Yun Soo Choe	1670.1015	2730

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EXAMINER

PAIK, SANG YEOP

ART UNIT	PAPER NUMBER
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3742

DATE MAILED: 09/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/652,493

Applicant(s)

CHOE ET AL.

Examiner

Sang Y Paik

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 September 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## DETAILED ACTION

### *Drawings*

1. The drawings are objected to under 37 CFR 1.83(a). The drawings **must show every feature of the invention specified in the claims**. Therefore, the **reflective layer claimed in claims 6 and 24 must be shown or the feature(s) canceled from the claim(s)**. **No new matter should be entered.**

Corrected drawing sheets in compliance with 37 CFR 1.121(d) **are required in reply to the Office action to avoid abandonment of the application**. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled “Replacement Sheet” in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. **The objection to the drawings will not be held in abeyance.**

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 2, 4, 5, 7, 11-13, 16-23 and 25 are rejected under 35 U.S.C. 102(b) as being anticipated by Chow (US 5,157,240).

Chow shows a heating crucible having a main body container, a cover formed of an insulating material such as the nitride ceramic with a nozzle, a cover heater formed as a thin film on a top surface of the cover, a body heater for heating the main body, the cover heater having a single wire pattern with the positive and negative terminals, a thermocouple in the cover, a heat-resistance layer on the cover heater, the main body also formed of an insulating material such as the nitride ceramic with a body heater as a thin film on the outer wall of the main body, the body heater having a single wire pattern with the positive and negative terminals, the body heater is also formed on the bottom portion of the main body, and a thermocouple inside the main body.

*Claim Rejections - 35 USC § 103*

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 3, 14 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chow (US 5,157,240) in view of Kano et al (US 6,242,719).

Chow shows the heating crucible claimed except the cover heater being platinum.

Kano et al shows a heating element such as platinum or graphite deposited on an insulating ceramic layer such as pyrolytic boron nitride or aluminum nitride. In view of Kano et

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al, it would have been obvious to one of ordinary skill in the art to adapt Chow with the cover heater made of platinum as an alternative conductive material that can alternatively provide stable and uniform heating temperature, and with respect to claim 14, it would have been obvious to further provide insulating material made of aluminum nitride that alternative provide a good electrical and thermally conductive material.

6. Claims 6 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chow (US 5,157,240) in view of Yahav et al (US 5,221,829).

Chow shows the heating crucible claimed except a heat reflective layer between the heater and the heat-resistant layer.

Yahav et al shows a heating device having a heating element (31) deposited to an insulating substrate (12), the heating element further provided with a heat-resistant layer (34) on the heating element with a layer (30) made of a metal would reflect the heat generated by the heating element toward the intended heating surface. In view of Yahav et al, it would have been obvious to one of ordinary skill in the art to adapt Chow with a reflective layer to reflect the heat generated by the heater toward an intended heating direction.

7. Claims 8, 15 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chow (US 5,157,240) in view of Bichrt (US 6,162,300).

Chow shows the heating crucible claimed except the cover or the main body is made of alumina or silicon carbide.

Bichrt shows a ceramic body made of alumina or silicon carbide as well as pyrolytic boron nitride. In view of Bichrt, it would have been obvious to one of ordinary skill in the art to adapt Chow with the cover and the main body made of alumina or silicon carbide in place of the

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pyrolytic boron nitride since such is well known in the art to alternatively provide a mechanically and thermally stable body that can withstand a temperature, pressure and chemical stress.

8. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chow (US 5,157,240).

Chow shows the heating crucible claimed except the cover heater is in a concentric pattern around the nozzle.

Chow shows the cover having a nozzle in the center of the cover with a cover heater provided around the nozzle. However, while, Chow does not show that the cover heater concentric pattern around the nozzle, it would have been obvious to one of ordinary skill in the art to provide the cover heater in the concentric pattern or any other pattern to affectively provide uniform and stable heating across the cover.

9. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chow (US 5,157,240) in view of Maeda et al (US 5,233,166) or Okuda et al (US 4,804,823).

Chow shows the heating crucible claimed except the cover heater is made of conductive paste with metal particles and metal oxides.

Maeda et al and Okuda et al shows a conductive paste made of metal particles and metal oxides applied to a ceramic substrate to form an electrical heater. In view of Maeda or Okuda et al, it would have been obvious to one of ordinary skill in the art to adapt Chow with the cover heater made of conductive paste having the metal particles and metal oxides to form a heating element that can provide a mechanically and thermally stable heater that can also withstand a high temperature.

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10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sang Y Paik whose telephone number is 703-308-1147. The examiner can normally be reached on M-F (9:00-4:00) First Friday Off.

The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

S. R.

Sang Y Paik  
Primary Examiner  
Art Unit 3742

syp